



# QuickCheck

## Property Based Testing

John Hughes

Software is Buggy



\$60 billion

Testing Software is Expensive



50%

Even when it's automated



Automated  
Test Cases

System

35%

...and still,  
bugs slip  
through

# Our Goal



# Automating automated tests

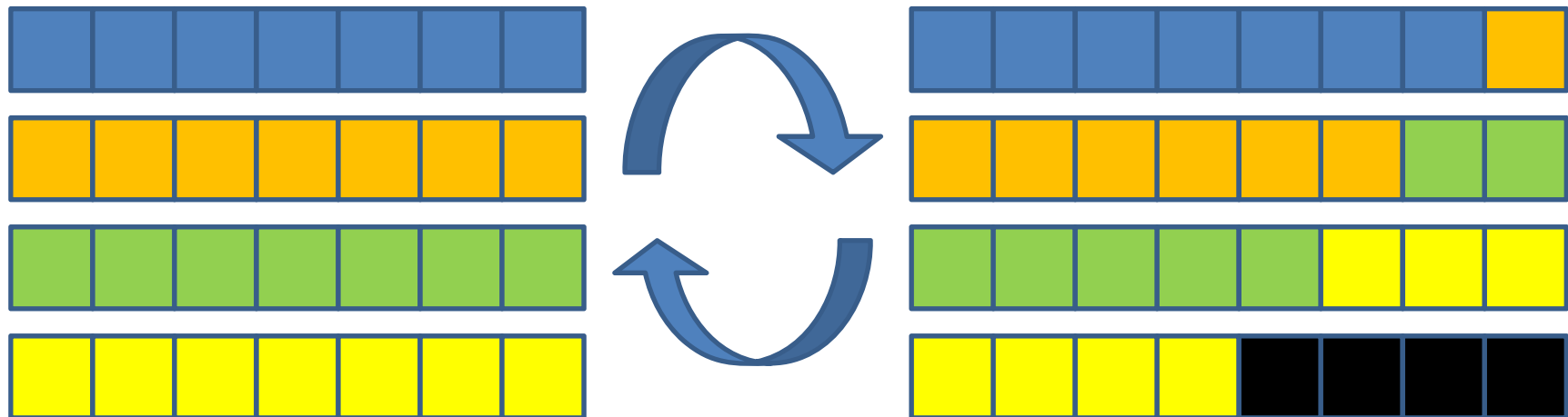


# Encoding GSM Text Messages



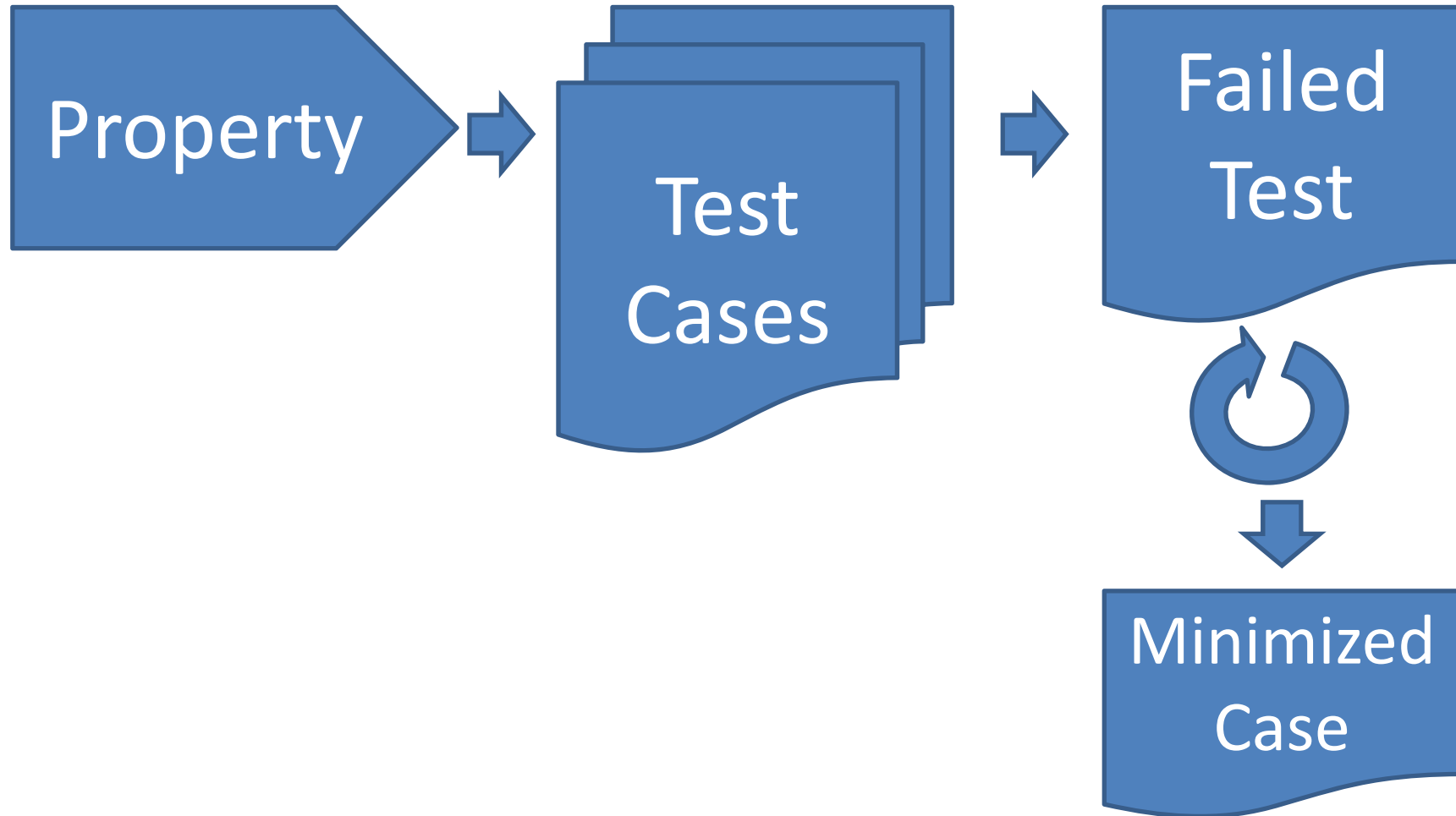
7-bit characters

8-bit bytes



## DEMO!!

# QuickCheck in a Nutshell

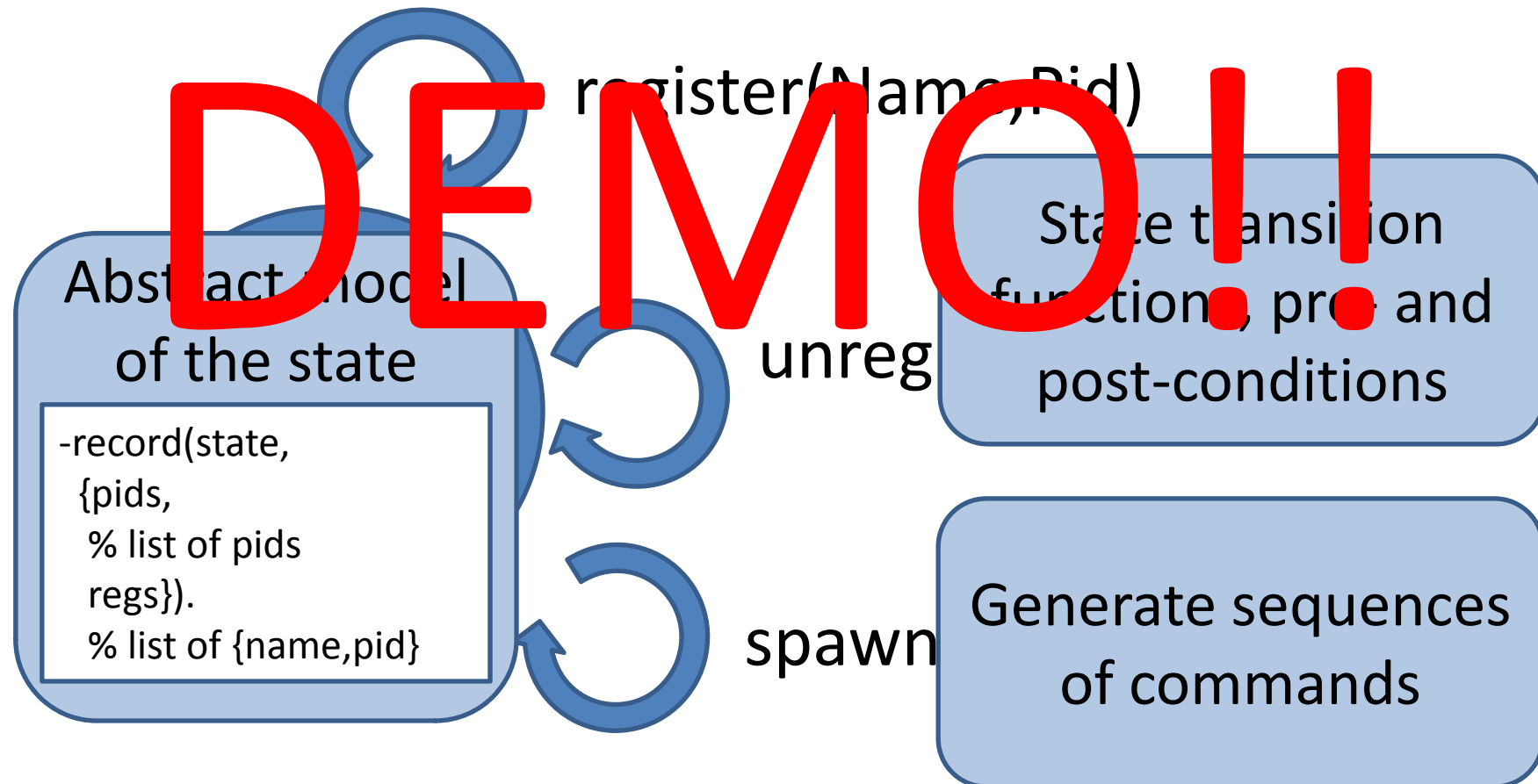




# State Machine Models



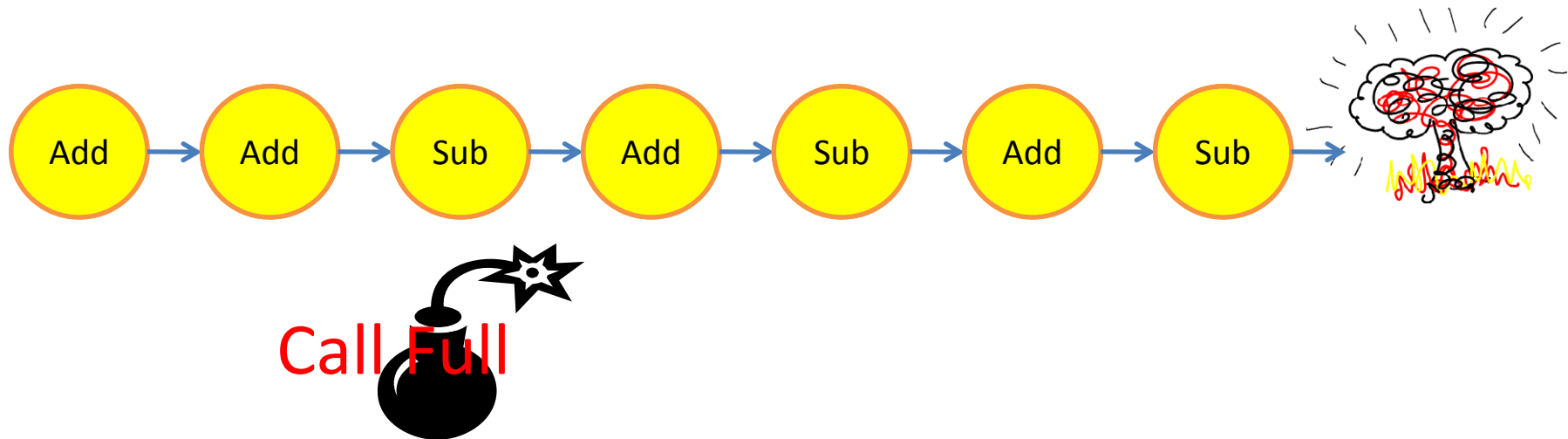
- How to specify systems with state?



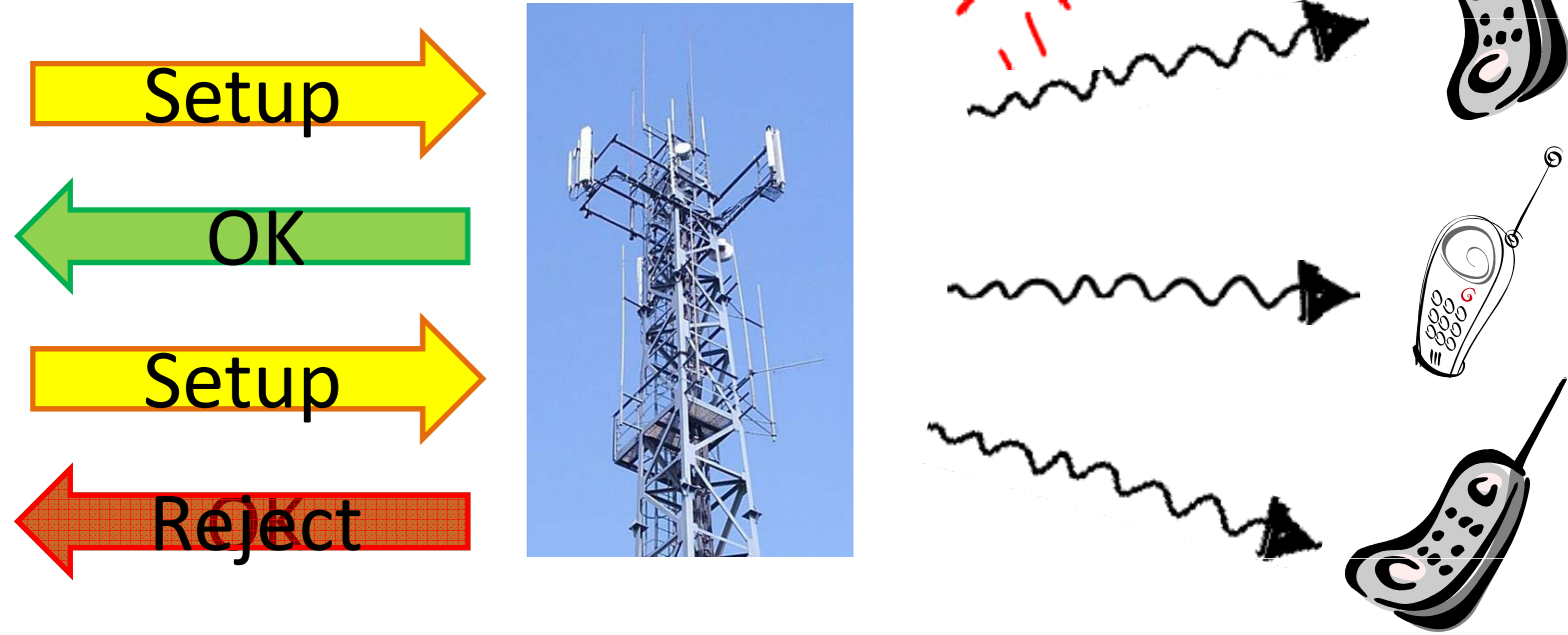
# Media Proxy



- Multimedia IP-telephony (IMS)
- Connects calls across a firewall
- Test adding and removing callers from a call



# 3G Radio Base Station



# SIP Encode/Decode



3300  
lines

600 lines

## Test Team

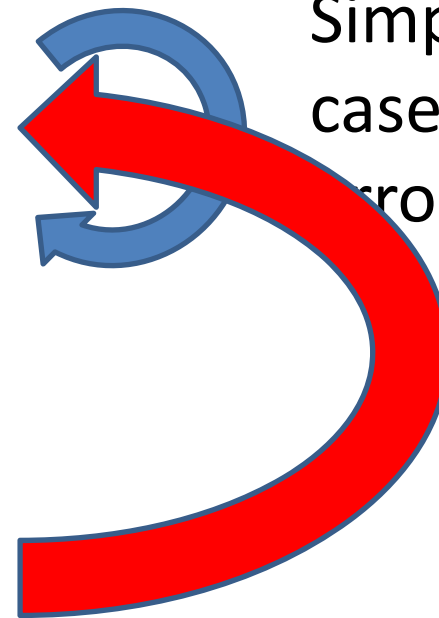
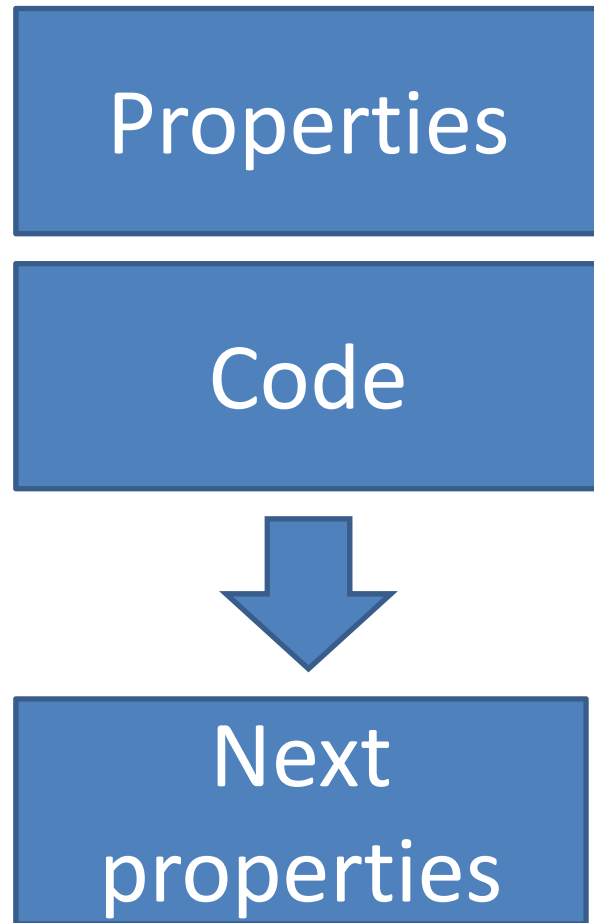
No bugs!

No bugs  
after 12  
months in  
production  
use

Several  
bugs

Then several  
more found  
by  
QuickCheck

# Property First Development



Simplified bug cases diagnose errors immediately

No need to fix bugs in old code